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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/346,678	07/02/1999	MASAAKI IWANE	35.C13630	2744

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FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER

DIAZ, JOSE R

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 12/03/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/346,678

Applicant(s)

IWANE ET AL.

Examiner

José R Díaz

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 September 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7 and 9-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7 and 9-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

➤ The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

➤ Claims 7 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Ebe et al. (US Pat. No. 5,394,826).

Regarding claim 7, Ebe et al. teach a semiconductor device comprising an active layer (5) formed on a substrate (4) having a (111) plane (see Fig. 2); where an angle formed by any arbitrary two cutting lines (consider, for example, the directions [1-10] and [2-1-1]) not coming into coincidence is represented by θ (see col. 3. lines 60-62), and the active layer has a cutting angle of $|\cos\theta| = 3^{1/2}/2$ or $\theta = 30^\circ$ (see Fig. 2, wherein $\theta = 30^\circ$ is shown).

Regarding claim 9, Ebe et al. teach that the deviation of surface from the (111) plane is within a small angle define by θ° (see col. 4, lines 24-27).

➤ Claims 10-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Gibbons (US Pat. No. 4,001,864).

Regarding claim 10, Gibbons teaches a well-known photoelectric conversion element comprising an antireflection layer (18), an n+ layer (12), a p- layer (14), and electrode (17) (see Fig. 1 and 9). Furthermore, Gibbons teaches that the n+ layer and

the p-layer are epitaxial silicon layers having a substantially (111) plane (see Figs. 8 and 9, col. 10, lines 33-36).

Regarding claim 11, Gibbons teaches that the thickness of the substrate is of about 30 microns (see Fig. 6B and col. 8, lines 53-55).

Response to Arguments

➤ Applicant's arguments filed September 25, 2002 have been fully considered but they are not persuasive. Applicant argues that the reference Ebe et al. fails to teach the claimed cutting angle. However, the Examiner disagrees. On page 21, lines 3-19 and Figure 9B, Applicant discloses, for example, two well-known cleavage directions [1-10] and [2-1-1] that form the claimed cutting angle, which are taught by Ebe et al. in Fig. 2 and col. 3, lines 60-62. Furthermore, the angle of 30° taught by Ebe et al. in Figure 2 is the same angle claimed by Applicant. Please note that $\theta = 30^\circ$ is the results of solving the equation of $|\cos\theta| = 3^{1/2}/2$. Therefore, the reference Ebe et al. teaches the claimed limitations since such a reference disclosed the claimed teaching of a cutting angle θ° of, for example, 30° , as required by Applicant.

Conclusion

➤ **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

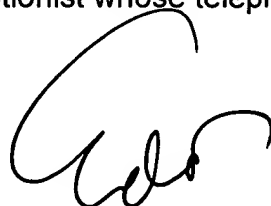
Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to José R Díaz whose telephone number is (703) 308-6078. The examiner can normally be reached on 9:00-5:00 Monday, Tuesday, Thursday and Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 746-3891 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JRD
December 2, 2002



EDDIE LEE
SUPERVISOR
TELEPHONE (703) 308-1690
FAX (703) 308-7722